



Tomorrow's Holden?



Today. The Holden HURRICANE.

How we put ideas to work to give you better motoring.

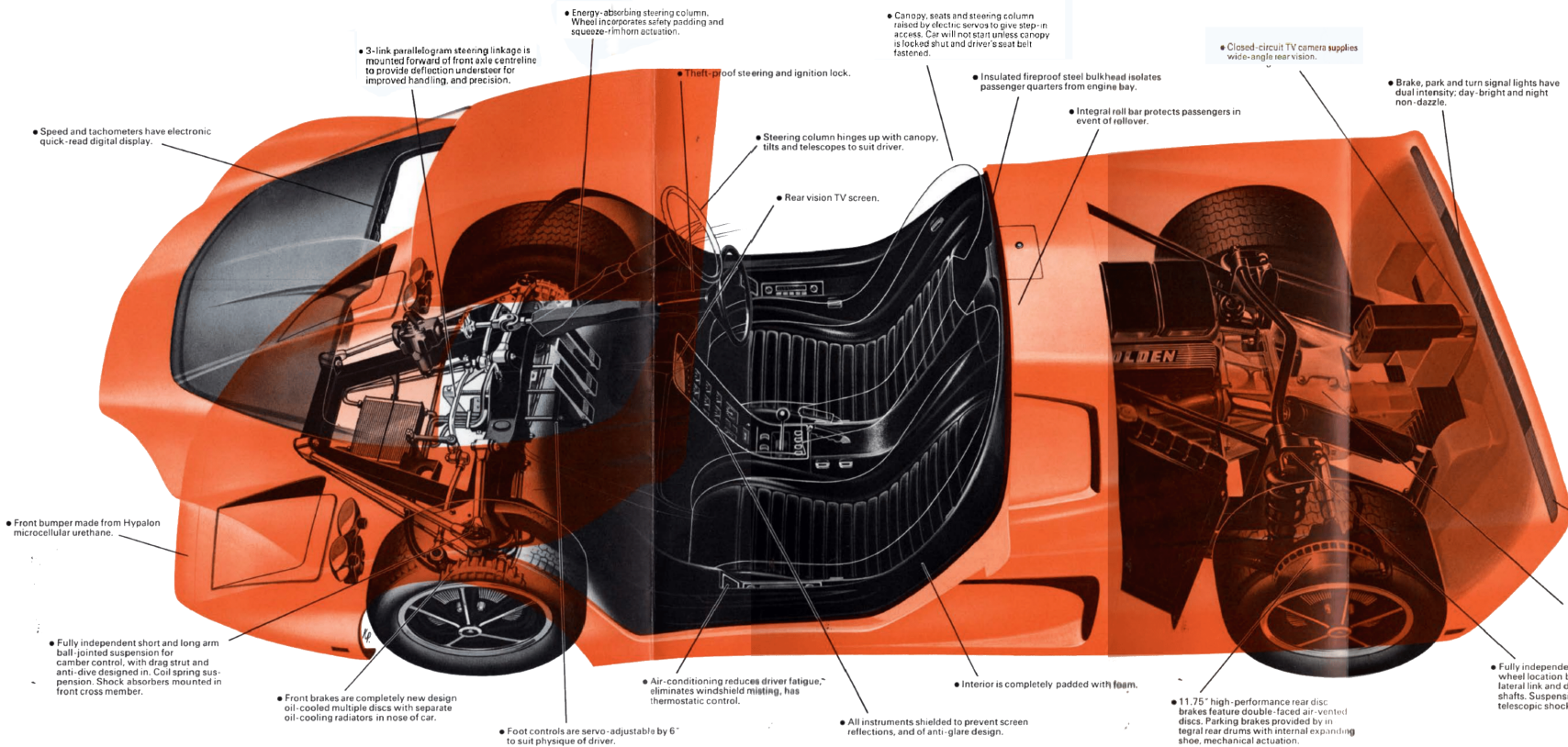
Engineering is not wholly a science. Only through the physical construction and testing of ideas can they become practical for everyday use.

The Holden Hurricane research vehicle has been developed and built at the GMH Technical Centre in Melbourne with this in mind, and specifically as an exploration in the factors involved in constructing a car with the maximum of primary safety in the form of handling, roadholding and braking...

the feasibility of applying aerospace techniques and materials to the manufacture of future Holdens; and the aerodynamics of road vehicles.

Another major consideration in planning was that the new knowledge to be gained from the vehicle should have relevance to Australian conditions, and to the Holdens of the future.

Only the stylists, designers, engineers, draftsmen and technicians in combination with the unique facilities of the \$7 million GMH Technical Centre made the project possible.



• Speed and tachometers have electronic quick-read digital display.

• 3-link parallelogram steering linkage is mounted forward of front axle centreline to provide deflection understeer for improved handling, and precision.

• Energy-absorbing steering column. Wheel incorporates safety padding and squeeze-in horn actuation.

• Theft-proof steering and ignition lock.

• Steering column hinges up with canopy, tilts and telescopes to suit driver.

• Rear vision TV screen.

• Canopy, seats and steering column raised by electric servos to give step-in access. Car will not start unless canopy is locked shut and driver's seat belt fastened.

• Insulated fireproof steel bulkhead isolates passenger quarters from engine bay.

• Integral roll bar protects passengers in event of rollover.

• Closed-circuit TV camera supplies wide-angle rear vision.

• Brake, park and turn signal lights have dual intensity: day-bright and night non-dazzle.

• Front bumper made from Hypalon microcellular urethane.

• Fully independent short and long arm ball-jointed suspension for camber control, with drag strut and anti-dive designed in. Coil spring suspension. Shock absorbers mounted in front cross member.

• Front brakes are completely new design oil-cooled multiple discs with separate oil-cooling radiators in nose of car.

• Foot controls are servo-adjustable by 6" to suit physique of driver.

• Air-conditioning reduces driver fatigue, eliminates windshield misting, has thermostatic control.

• All instruments shielded to prevent screen reflections, and of anti-glare design.

• Interior is completely padded with foam.

• 11.75" high-performance rear disc brakes feature double-faced air-vented discs. Parking brakes provided by integral rear drums with internal expanding shoe, mechanical actuation.

• Transmission is transaxle type, mounted to engine, with 4 forward speeds, all synchromesh.

• Fully independent rear suspension with wheel location by trailing arm, lower lateral link and double U-jointed drive shafts. Suspension by coil springs with telescopic shock absorbers.

• Rear directional indicator lights in banks of four have sequential flashing operation towards the turning direction, are high-mounted for safety and improved visibility.

Equipment			
1.	Electronic digital speedometer.	17.	Engine oil temperature.
2.	Digital tachometer.	18.	Engine oil level.
3.	Pathfinder control panel.	19.	Engine oil pressure.
4.	Ignition warning.	20.	Fuel level gauge.
5.	Main beam warning.	21.	Fuel pressure.
6.	Seat belt warning.	22.	Water temperature.
7.	Canopy lock warning.	23.	Battery voltage.
8.	Handbrake warning.	24.	Battery demand-amps.
9.	Low fuel warning.	25.	Engine vacuum.
10.	Headlight circuit failure.	26.	Inside cockpit temperature.
11.	Tail-light failure.	27.	Outside temperature.
12.	Brake light failure.	28.	Brake fluid level.
13.	Turn signal failure.	29.	Radiator water level.
14.	Brake fluid loss.	30.	Electronic digital clock.
15.	Engine fire risk warning.	31.	Air-conditioning temperature control.
16.	TV rear vision screen.	32.	Automatic station-seeking radio.

Dimensions:
 Overall length 161.8 ins.
 Overall width 71.0 ins.
 Overall height 39.2 ins.
 Wheelbase 96.0 ins.

Specifications

Construction

The Holden Hurricane is a mid-engined rear drive vehicle with optimum weight distribution, roadholding and handling. Chassis construction is of the perimeter frame type, with welded steel box section cross and side members. A tubular steel space-frame incorporates the rollbar and engine firewall. All body, suspension and power train mounts are welded to the perimeter frame.

Body construction is in fibreglass, consisting of three sections:

The canopy, which tilts up and forward over the front wheels to allow passenger access.

The engine hood, which pivots up and back over the rear wheels, is removable for major servicing.

The body shell, mounted to the frame with rubber insulated couplings.

The passenger compartment is of cockpit type, with individual form-fitting seats, incorporating full fixed headrests and self-adjusting safety belts.

When the canopy is raised, both seats rise 10" and pivot forward, and the steering column pivots up and forward, all under electric power. (A manual canopy release is provided in the event of power failure.)

The circuits are sequentially timed so that the canopy opens and steering column rises before the seats elevate.

As a safety feature, the car cannot be started until the canopy is locked down, seats fully lowered, driver's seat belt secured, and engine hood is also secure.

Ergonomics*

The vehicle is designed to allow the driver to concentrate maximum attention on the road. For this reason, major instruments have electronic digital readout for instantaneous comprehension. Warning lights are provided to draw attention to failures or potential problems, and because it is a research vehicle extremely detailed instrumentation is provided.

Rear vision is provided by closed circuit television.

A major innovation is the Pathfinder; an automatic route indicator system. Magnetic signals picked up from road senders are

compared electronically with a coded tape containing directions for the optimum route to any desired destination.



The driver receives advance notice of forthcoming turns from a panel mounted in the centre of the dash. For straight-ahead driving, the centre green arrow is illuminated. Should a right or left turn be needed, a warning buzz will alert the driver. An amber arrow will be illuminated one road before the turn is required, a red arrow will show that the turn is required on the next road available.

Electronic

Wherever possible, electrical and electronic devices assist the driver in his tasks. Such equipment includes the canopy opening and closing sequence, and driver's pedal fore-and-aft adjustment. Nothing has been spared to give the driver a truly complete instrumentation set-up, with a detailed back-up warning light system. Application of advanced techniques also makes possible the use of closed circuit TV for rear vision, sequentially flashing rear directional indicator lights, and dual intensity lighting for day and night conditions.

The battery is a 60 amp hr. heavy duty lead acid type in polypropylene case.

Headlights are the four lamp system; two double and two single filament quartz iodine bulbs. The outer pair form the dipped beam. Both pairs are protected and concealed behind electrically operated covers when not in use.

Red and white side marker lamps are also provided, as are reversing lamps.

Safety

Safety features have been individually detailed, but a highlight is the design of the vehicle for research into the effect of aerodynamics on road handling, and the emphasis on road-holding, handling and braking as a vital part of overall safety. Other innovations are the foam lined fuel tank, the integral headrests, digital read-out instruments, fully padded interior, ignition safety interlocks and the fire warning system.

Braking

Another exclusive of the Holden Hurricane is the oil cooled front disc brakes. Operating on an entirely new principle, these offer complete freedom from fade. The kinetic energy of the vehicle is directly converted to heat in the oil, which is then dissipated through separate individual cooling systems for each front brake.

Rear brakes are high-performance single-piston discs of 11.75 inch diameter. Parking is by integral rear drum brakes, lever-operated from the cockpit.

Service brake operation is power-assisted, and separate hydraulic circuits are provided for front and rear pairs.

Engine and Transmission

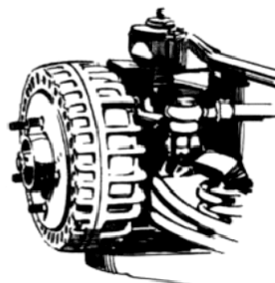
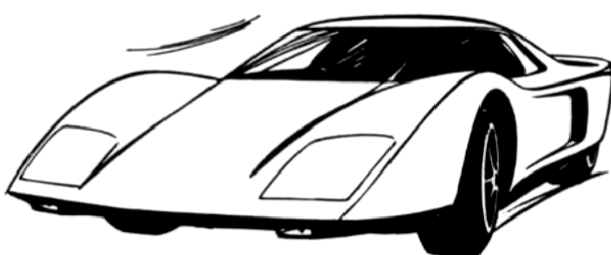
Power is supplied by a specially produced experimental Holden V8 engine of 253 cu. ins. capacity. It is mounted forward of the rear axle line to provide improved rate of response to control manoeuvres. The transmission is mounted directly to the rear of the engine, and incorporates the differential function. The unit selected provides four forward ratios each with synchromesh, and is operated by a console mounted lever. Ratios are 1st: 3.11:1, 2nd: 2.20:1, 3rd: 1.47:1, 4th: 1.00:1, Reverse: 3.11:1.

Wheels and Tyres

Wheels are of 15" diameter, with 6" front safety rims, 8" rear. Front tyres contact width is 8.9", rear 10.8".



Holden HURRICANE



*A study of the physique of both sexes of adults as related to vehicle driver and passenger comfort.